PROPOSED SYNOPSIS ON

IMPACT OF FARM MECHANIZATION ON PRODUCTIVITY & EMPLOYMENT WITH REFERENCE TO NANDED DISTRICT, MAHARASHTRA

SUBMITTED TO THE

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

FOR THE REGISTRATON DEGREE OF

DOCTOR OF PHILOSOPHY IN MANAGEMENT

UNDER THE FACULTY OF

MANAGEMENT STUDIES

BY

MISS. P.T. YEDKE

B.Sc., MBA (HR)

UNDER THE GUIDANCE OF

DR. B. S.MUDHOLKAR

MBA, M.Phil. Ph.D.NET

SCHOOL OF COMMERCE AND MANAGEMENT SCIENCES,

S.R.T.M.UNIVERSITY, NANDED

JUNE, 2016

IMPACT OF FARM MECHANIZATION ON PRODUCTIVITY AND EMPLOYMENT IN NANDED DISTRICT, MAHARASHTRA

Introduction

Agriculture is the cultivation of animals, plants and fungi for food, fiber, biofuel, medicinal and other products used to sustain and enhance human life. Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. In the civilized world, industrial agriculture based on large scale monoculture farming has become the dominant agricultural methodology. Modern agronomy, plant breeding, agrochemicals such as pesticides and fertilizers, and technological developments have in many cases sharply increased yields from cultivation but at the same time have caused widespread ecological damage and negative human health effects. Selective breeding and modern practices in animal husbandry have similarly increased the output of meat, but have raised concerns about animal welfare and the health effects of the antibiotics, growth hormones, and other chemicals commonly used in industrial meat production Genetically modified organisms are an increasing component of agriculture, although they are banned in several countries.

History

Agriculture involves the domestication of plants. Data from molecular and archaeological research generated over the past 15 years now makes it clear that agriculture began independently over a much larger area of the globe than was once thought, and included a diverse range of taxa. At least 11 regions of the Old and New World were involved as independent centers of origin, encompassing geographically isolated regions on most continents, but several more have been suggested. The earliest development was around 11,500 years ago separately in both the Fertile Crescent and at Chogha Golan in modern day Iran, where wild barley, wheat and lentils were cultivated and where domesticated forms of wheat appeared about 9800 BC. Early agricultural communities such as Chogha Golan in 10,000 BC along with settlements such as Chogha Bonut (the

earliest village in Susiana) in 8000 BC began to flourish in and around the Zagros Mountains region in western Iran. There are 7,000yearold jars of wine excavated in the Zagros Mountains; Ruins of 7,000yearold settlements such as Tepe Sialk are further testament to that. The two main Neolithic Iranian settlements were the Zayandeh River Culture and Ganj Dareh. Around about the same time the earliest known clay vessels and modeled human and animal terracotta figurines were produced at Ganja Dareh, with settlements such as Chogha Mish, dating back to 6800 BC also in western Iran. Independent development of agriculture occurred in northern and southern China, Africa's Sahel, New Guinea, parts of India and several regions of the Americas. Agricultural techniques such as irrigation, crop rotation, and application of fertilizers were developed soon after the Neolithic Revolution but have made significant strides in the past 200 years. The Haber Bosch method for synthesizing ammonium nitrate fertilizer represented a major breakthrough and allowed crop yields to overcome previous constraints. In the past century, agriculture in the developed nations, and to a lesser extent in the developing world, has seen large rises in productivity due to the replacement of human labor by mechanization, synthetic fertilizers, pesticides, and selective breeding.

Mechanized agriculture:

Mechanized agriculture is the process of using agricultural machinery to mechanize the work of agriculture, greatly increasing farm worker productivity. In modern times, powered machinery has replaced many jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules. The history of agriculture contains many examples of tool use, such as the plough. Mechanization involves the use of an intermediate device between the power source and the work. This intermediate device usually transforms motion, such as rotary to linear, or provides some sort of mechanical advantage, such as speed increase or decrease or leverage. Current mechanized agriculture includes the use of tractors, trucks, combine harvesters, airplanes (crop dusters), helicopters, and other vehicles.

Agriculture productivity and Employment:

Agriculture productivity is measured as the ratio of output to agriculture inputs. While individual products are usually measured by weights, their varying densities make measuring over all agriculture output difficult. Therefore, output is usually measured as the market value of final output, which includes intermediate products such as corn feed used in the meat industries. This

output value may be compared to many different types of inputs such as labour & land. These are called as partial measures of productivity. Agriculture productivity may also be measured by what is termed total factor productivity. This method of calculating agriculture productivity compares as index of agriculture inputs to an index of outputs.

Growth in farm mechanisation is on account of replacement of animal labour. Further, farm mechanisation also provides different streams of employment related to handling of farm machines thus resulting in increased rural employment. Clearly, increased farm mechanisation is a key step towards better rural prosperity. However, farm mechanisation in India is in the initial stages of development and dominated by use of tractors and tractor mounted implements. While the Indian tractor market is highly organised and among the largest in the world, the farm equipment market is dominated by unorganised players accounting for more than 50 per cent of market share.

Review of Literature:

There are so many outstanding studies are conducted on farm mechanization, effect of farm mechanization on productivity. Some of these studies are examined in the review literature. But there are very few studies are conducted on impact of farm mechanization on productivity, socio-economic conditions of labors, agricultural growth & comparative study of economics of labors & machinery. That's why researcher selected the topic "Impact of farm mechanization on productivity and employment in Nanded district". The researcher tried to know the impact of farm mechanization on agriculture labors. The findings of this study are very helpful for new researchers and agriculture labors. In this research study some quality research papers review has been taken by the researcher.

Research report on "Effect of farm mechanization on agricultural growth & comparative economics of labour & machinery" by Debashish Sarkar, Debajit Roy: According to this study mechanization means using machinery to perform tasks or to assist humans in performing tasks. Mechanization is the use of modern implements as well as motorized equipment like plough, harrow, etc. this research finds that the mechanization reduces the labour costs on the other hand, it increases capital expenses for machinery and equipment. This survey shows that the cost of machinery is very high hence the farmers do not use any machines. The time advantage in mechanization is clearly reflected here especially as comparable costs. It study shows that the there

is no significant difference of mechanization on agriculture growth & comparative economics of labour & machinery.

The Journal of Animal & Plant Sciences, 21(3): 2011, Page: 589-594 ISSN: 1018-7081 entitled "Impact of farm mechanization on labor use in Northern Bangladesh" This study finds out the effect of mechanization on labour use and profitability in wheat cultivation. The findings revealed that less number of labors per hectare is required to complete the production process by mechanized farm compared to traditional farm. Family labour is mostly affected by the mechanization. Animal power and output have positive effect on labour requirement, while power tiller and input costs have adverse effect on labour requirement for wheat cultivation. The yield of wheat under mechanization is higher than that of traditional farms. Total variable cost is significantly higher for traditional farms. Gross margin is found to be higher for mechanized farm compared to traditional farm. High price of power tiller parts is mentioned as a major problem of mechanization in the study areas. This study concludes that mechanization has adverse effects on family labour and more research need to be conducted to develop appropriate technology to increase the production of wheat without substituting labour.

John F. Reid article in Economic Times entitled **The Impact of Mechanization on Agriculture** (NAE Website): This study conclude that Agricultural mechanizations, one of the great achievements of the 20th century was enabled by technologies that created value in agricultural production practices through the more efficient use of labor, the timeliness of operations, and more efficient input management with a focus on sustainable, high productivity systems. This study finds that affordable machinery, which increased capability and standardization and measurably improved productivity, was a key enabler of agricultural mechanization.

Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, February 1-5, 2003 entitled "**Farm mechanization & the farm labor market: a socio economic model of induced innovation" by Robert D. Emerson**. The basic concept of this theory is that the development and adoption of technology to save an input is induced by its relatively higher price. It study that demand for technological change is the same for all producers since the face the same prices. The previous studies ignore the importance of the socioeconomic environment

(e.g. political and cultural), resulting from institutional changes and its impact on technological change. The new direction of induced innovation theory emphasizes the role of Institutions and their relationship with technological change as suggested by Binswanger (1978), De Janvry (1973, 1978a, 1978b), Ruttan, and several other economists. In this study of the change agricultural technology, they take into account structural changes in the agricultural industry as well as the political influences. Some examples of political factors that influence the farm commodity program are found in Gardner and those that influence technological change are found in De Janvry (1978a, 1978b). The paper emphasizes the demand for farm mechanization (capital using, labor) The socioeconomic influences from institutional change include farm policy through government payments, and the demand for new technology by large producers as expressed through the experiment station system and the political process. Government policy has a major impact on the direction of technological change.

The supply of new technology is a result of the combination of government and private funding for research on new technology. Government can also indirectly change the direction of the demand for technology by farm subsidies. A government payment associated with the demand and supply of inputs can influence the type of new technology. This payment directly affects the use of agricultural land, and may change the demand for land. In this study, they hypothesize that large and small producers have different demands for technology. The percentage of large producers will capture the effectiveness and incentives to lobby for the change of technology.

Importance and Rational of the Research study:

Mechanization means using machinery to perform tasks and to assist humans in performing tasks. Mechanization is the use of modern implements as well as equipment's like motorized equipment's like plough, harrow, ridger and also the use of agro-chemicals like insecticides, herbicides, fertilizers and improved seeds in the farm. While the mechanization reduces labour costs, it increases capital expenses for machinery and equipment. As farmer in general is too poor to be able to buy expensive machines, mechanization depends much upon the specific requirements of the crop grown, nature of crop. Thus the capital cost incurred for mechanization in relation to marketable surplus and value of output remains crucial for the spread of mechanization particularly in Maharashtra where majority of the farms perform at the sustainable level.

Farm mechanization is helpful to bring a significant improvement in agricultural productivity. Thus there is strong need of agricultural productivity. The growth rate of population is very high in India. Hence the country has facing the food shortage problem. Therefore farm mechanization is very important. The goal of farm mechanization is to maximize the potential yield of crops. This is achieved through the application of synthetic chemicals, genetically modified organisms, and a number of other industrial products i.e. mechanized implements. Production of these crops is beneficial to nothing but food and economy.

The need to involve studying on **Impact of farm mechanization on productivity and an Employment in Nanded district, Maharashtra** is necessitated due to change in the farm mechanization and socio- economic conditions of labors. In the light of this present research study will be undertaken, so for such an extensive research study has not been undertaken. However few studies available in the form of research paper, article etc. on one or two aspects hence in view of this it felt necessary to the researcher to study covering wider area of Maharashtra. Therefore, the title of my research study **"Impact of farm mechanization on productivity and employment in Nanded district, Maharashtra"**

Objectives of the Study:

1. To explore the impact of farm mechanization on productivity and employment.
2. To analyses role & policy adopted by the government for the development of farm mechanization.
3. To study the types of mechanization used in agriculture production.
4. To measure the impact of mechanization on cost of production per hectare.
5. To find out the perception of farmers and agriculture labour towards farm mechanization.
6. To measure the efficiency and performance of farm mechanization as compare to labour.

Hypothesis Of Research Study:

Null Hypothesis 1: There is no significant impact of mechanization on productivity and employment.

Null Hypothesis 2: Government has not played significant role in developing farm mechanization to increase the production/ yield.

Null Hypothesis 3: There is no significant impact of mechanization on cost of production per hectare.

Null Hypothesis 4: There is no significant effect of farm mechanization on efficiency and performance.

Research Methodology:-

1. **Type of research design:** This is purely descriptive research design for conducting the research for the above title. This research includes survey and fact findings inquiries of different kinds.
2. **Research approach:** This is purely survey method will be used by researcher to collect necessary and first-hand information from agriculture labour.
3. **Source of data collection:**

a. Primary data: For this research work primary data will be collected through questionnaire visiting in person to farmers and agriculture labour scattered all over Nanded district.

b. Secondary data: The information required for this study will be collected from various sources like books, journals, research paper, research article, and reports, of government, reports of national and international agency newspaper and extensive use of various related web sites.

4) Universe or population of study: To conduct the research work the researcher has defined the universe as Nanded district of Maharashtra as a whole.

5) Sample design: In designing the sample the researcher must specify three things

a) **Sampling Unit**: All farmers and Agriculture Labors of Nanded district.

b) **Sampling Technique:** Non- probability sampling method will be used to collect required data for this study.

c) **Selection of Sample Size:** Universe of the study is not definite and clear and it is somewhat difficult to count the no. of farmers and agriculture labour hence Convenient/ purposive sampling method will be used for the selection of farmers and agriculture labours from 16 talukas of Nanded district. Tentatively 500to 600 total samples will be collected to fulfill the objective of the study. Detailed proposed sampling plan is given below. The sample of farmers and agriculture labour will change as per the requirement of research study.

Sr. No.	Talukas	Farmer	Labour
1	Nanded	20	15
2	Ardhapur	20	15
3	Bhokar	20	15
4	Himayatnagar	20	15
5	Hadgaon	20	15
6	Kinwat	20	15
7	Mahur	20	15
8	Umari	20	15
9	Dharmabad	20	15
10	Biloli	20	15
11	Degloor	20	15
12	Mukhed	20	15
13	Naigaon	20	15
14	Kandhar	20	15
15	Loha	20	15
16	Mudkhed	20	15
	Total	320	240

6) Research instrument: The necessary and required information will be collected though designing questionnaire, scheduled method and interview.

7) Type of questionnaire: For this study structured and defined form of questionnaire to collect the required information for this study.

8) Types of questions: To make necessary inquiry for this research work closed ended questionnaires or scheduled will be prepared.

PROPOSED CHAPTER SCHEME OF RESEARCH STUDY:

Chapter No.	Title of the Chapter
1	Introduction
2	Research Methodology
3	Review of Literature
4	Impact of mechanization on productivity and on employment.
5	Data Analysis and Interpretation
6	Findings, Conclusions and Suggestions

References

1) "Definition of Agriculture". State of Maine. Retrieved 6 May 2013.

2) John F. Reid Economic Times: The Impact of Mechanization on Agriculture (NAE Website).

3) Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, February 1-5, 2003 entitled **"**Farm mechanization & the farm labor market: a socio economic model of induced innovation" by Robert D. Emerson

4) Report by Agro - Economic Research Centre, ViswaBharati.

5) Research report on "Effect of farm mechanization on agricultural growth & comparative economics of labour & machinery" by Debashish Sarkar, Debajit Roy

6) The Journal of Animal & Plant Sciences, 21(3): 2011, Page: 589-594 ISSN: 1018-7081 entitled "Impact of farm mechanization on labor use in Northern Bangladesh"

7) Asian Productivity Organization 1983, Farm Mechanization in Asia, APO, Tokyo.

8) Balishter, Gupta, V.K. and Singh, R. 1991. Impact of Mechanization on Employment and Farm Productivity. Productivity, 32 (3): 484-489.

9) Farm Mechanization: The Impact on Labour at the Level of the Farm Household Bill Reimer

10) Impact of Agricultural Mechanization on Production, Productivity, Cropping Intensity Income Generation and Employment of Labour- S.R. Verma

Research student
Yedke Priyanka T.

Guide signature
Dr. B. S. Mudholkar
Assistant Professor
SCMS, S.R.T.M.University, Nanded

Filename:	Ph.D.Synopsis of Miss Yedke P
Directory:	H:\phd_data\Phd work
Template:	C:\Users\admin\AppData\Roaming\Microsoft\Templates\Normal.dotm
Title:	
Subject:	
Author:	USER
Keywords:	
Comments:	
Creation Date:	07-Oct-16 9:19:00 PM
Change Number:	2
Last Saved On:	07-Oct-16 9:19:00 PM
Last Saved By:	admin
Total Editing Time:	0 Minutes
Last Printed On:	07-Oct-16 9:19:00 PM

As of Last Complete Printing

Number of Pages:	11
Number of Words:	3,001 (approx.)
Number of Characters:	17,110 (approx.)